REMARKS/ARGUMENTS

Claims 1-9, 11-29, 39-67 and 77 remain in this application. Claim 10 has been canceled. Claims 30-38 and 68-76, previously withdrawn, were canceled. Claim 78 has been added

In view of the examiner's earlier restriction requirement, applicant retains the right to present claims 30-38 and 68-76 in a divisional application.

Claim 1 has been amended in view of the new matter rejection.

Claims 9, 11, 15, and 29, indicated as containing allowable subject matter, have been amended to be independent form.

Art rejection US 3,652,440 (hereinafter "Dehner")

To the extent that the rejection over Dehner might be maintained against amended claim 1, reconsideration is requested because nothing in Dehner suggests that the duration of the measuring period is based on a characteristic of the machining current.

The claimed invention is a method of controlling an electrochemical machining process, in which the spectral composition of the voltage induced by the machining current is analyzed for a period of time which has been predetermined to be sufficient to determine if control parameters should be changed. This was the meaning of claim 1 as filed, and amended claim 1 is consistent with this limitation.

Applicants have taught that the duration of the period should be selected in various ways which ensure that the determining of information is based on the more informative parts of the measured voltage (page 12, lines 27-29; page 13, lines 16-17; page 14, lines 9-15; page 19, lines 10-12; page 29, lines 2-3).

Dehner teaches an electrochemical machining apparatus which is intended to distinguish between high frequency voltages across the machining gap introduced by system noise, and the occurrence of a spark. The required sensitivity of the sensing system is independent of both the voltage and current at the machining gap (col. 1, lines 18-31). Dehner shuts down machining only when a spark has occurred and the power supply itself is not producing noise. Thus the measuring period is based on a characteristic of the power supply, not the machining current.

Dehner's summary states that it distinguishes between a spark and other noise by sensing

all signals across the gap in a predetermined frequency range and selecting from the sensed signals a high frequency voltage which appears only across the gap (col. 1, lines 66-69). However, what really occurs is that this sensed signal is blocked or ignored whenever there is a signal in this same frequency range passing through or being produced by the power supply. Thus if power supply noise in the filter bandpass range is present while a spark occurs, the spark will not be detected because the analysis has been temporarily stopped.

More particularly, Dehner teaches that a filter 10 receives transient noise signals which exist on the lines of the AC power source 16 (col. 2, lines 68-75), and a filter 17 receives signals corresponding to the voltage across the machining gap. The filters 10 and 17 have substantially the same frequency range, "which is essentially the same frequency range as that of voltages produced by sparks at the machining gap" (col. 2, lines 17-19). This frequency range excludes rectifier ripple noise or silicon controlled rectifier noise, both of which rectifier noises are in frequency ranges different from the spark frequencies.

Dehner teaches that whenever there is an output from the pulse shaping and timing network 12 (resulting from a sufficient output from filter 10) a comparator 14 prevents signals from reaching flip-flop circuit 15 which turns off machining (col. 2, lines 24-27). Thus the signals from the filter 17 are blocked from reaching the pulse shaping and timing network 19 even though a spark may have occurred if the spark occurs simultaneously with, or just after, noise causes an output from filter 10.

This is explained more completely in column 3. The detailed explanations of processing of signals from the filter 10 shows that avoidance of unnecessary stoppage of machining is the most important object of the invention. Only if a spark signal exists long enough, with no noise signal from filter 10, will the flip-flop 15 cause a change in the machining process. The timing chart of Fig. 5 shows that power line noise signal, whether its processing starts before, with or a little later than the gap current signal, takes logical priority over the gap current signal (col. 7, line 47 through col. 8, line 18). Furthermore, the only change that Dehner can cause in the machining process is to stop it (col. 6, lines 73-75).

Once the machining is stopped, it does not resume automatically (col. 7, lines 12-22; col. 8, lines 44-54).

Therefore it is clear that Dehner teaches that the voltage induced by the machining current

is analyzed continuously for the presence of signals within the filter bandpass, including those arising from transient conditions, but the filter output is blocked from reaching the adapting circuit 15 whenever another voltage (the power supply output) contains signals within that same bandpass range. This is not analysis for a predetermined period of time. It is analysis that continues until some unrelated condition occurs.

Accordingly Dehner does not teach nor suggest the invention of claim 1.

Applicants appreciate the indication of allowable subject matter in various claims, and allowance of claims 39-67 and 77. As a result, all the other claims are either dependent from an allowed or allowable claim, or contain subject matter which has been indicated as being allowable.

In view of the showing of patentability of the rejected claims, applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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